

We Claim:

1. A non-invasive method of determining the glucose level of blood in a patient comprising the steps of:
 - a. non-invasively measuring the speed of sound through the blood of the patient;
 - b. non-invasively measuring the electrical conductivity of the blood of the patient;
 - c. non-invasively measuring the heat capacity of the blood of the patient;
 - d. calculating the corresponding glucose level for each of the measurements of the speed of sound, electrical conductivity of the blood and heat capacity of the blood;
 - e. comparing the three calculated glucose levels; and
 - f.
 1. if all three calculated glucose levels are similar within a predefined tolerance level, then calculating the final glucose level by determining a weighted average of the three calculated glucose levels; or
 2. if only two of the three calculated levels are similar within a predefined tolerance level, then calculating the final glucose level by determining a weighted average of only the two similar calculated glucose levels.
2. A non-invasive method of determining the glucose level according to Claim 1, further comprising the steps of:
 - g. repeating the measurement of one of the parameters of either speed, conductivity or heat capacity according to any one of the steps a-c herein;
 - h. calculating the corresponding glucose level for the measurement of the parameter in step g herein; and
 - i. periodically repeating steps a-f herein to confirm the accuracy of the glucose calculation.

3. A non-invasive method of determining the glucose level according to Claim 1, wherein the speed of sound is determined by means of measurements of an ultra sound signal transmitted through the body.
4. A non-invasive method of determining the glucose level according to Claim 1, wherein the electrical conductivity of the blood is determined by means of electromagnetic inductance.
5. A non-invasive method of determining the glucose level according to Claim 1, wherein the heat capacity of the blood is determined by means of changing the temperature of a measured volume.
6. A non-invasive method of determining the glucose level of blood in a patient comprising the steps of:
 - a. non-invasively measuring three distinct parameters of the body from which glucose level can be calculated;
 - b. calculating the corresponding glucose level for each of the three measurements;
 - c. comparing the three calculated glucose levels; and
 - d. 1. if all three calculated glucose levels are similar within a predefined tolerance level, then calculating the final glucose level by determining a weighted average of the three calculated glucose levels; or
2. if only two of the three calculated levels are similar within a predefined tolerance level, then calculating the final glucose level by determining a weighted average of only the two similar calculated glucose levels.

7. A non-invasive method of determining the glucose level according to Claim 6, further comprising the steps of:
 - e. repeating the measurement of one of the parameters;
 - f. calculating the corresponding glucose level for the measurement of the parameter in step e herein; and
 - g. periodically repeating steps a -d herein to confirm the accuracy of the glucose calculation.
8. A non-invasive method of determining glucose level according to Claim 6, wherein the three distinct parameters of the body from which glucose level can be calculated are selected from the group consisting of speed of sound through the body, conductivity, heat capacity of the blood, acoustic impedance, electrical/magnetic coefficient, thermal conductivity, elasticity, blood density, specific gravity, polarization coefficient, optical scattering, nuclear magnetic resonance , analyte, blood temperature, body temperature, the effects of thermal waves, the infrared radiation naturally emitted from the body, responses by the tissue to a stimulus, electrical properties, electromotive force and electric current.
9. A non-invasive method of determining glucose level according to Claim 1, wherein the weight for each calculated glucose level is based on the reliability of the measurement of the corresponding parameter.
10. A non-invasive method of determining glucose level according to Claim 6, wherein the weight for each calculated glucose level is based on the reliability of the measurement of the corresponding parameter.
11. A non-invasive method of determining glucose level according to Claim 2, wherein steps a-f are repeated after a predetermined amount of time.

12. A non-invasive method of determining glucose level according to Claim 2, wherein steps a-f are repeated after a predetermined number of measurements.
13. A non-invasive method of determining glucose level according to Claim 7, wherein steps a-d are repeated after a predetermined amount of time.
14. A non-invasive method of determining glucose level according to Claim 7, wherein steps a-d are repeated after a predetermined number of measurements.
15. A non-invasive method of determining glucose level according to Claim 1, wherein, if one of the calculated glucose levels is not within the predefined tolerance level, then checking the remaining two calculated glucose levels to confirm they are within a tighter tolerance range and then calculating the final glucose level by determining the weighted average of only the two similar calculated glucose levels.
16. A non-invasive method of determining glucose level according to Claim 6, wherein, if one of the calculated glucose levels is not within the predefined tolerance level, then checking the remaining two calculated glucose levels to confirm they are within a tighter tolerance range and then calculating the final glucose level by determining the weighted average of only the two similar calculated glucose levels.

17. A non-invasive method of determining glucose level according to Claim 1, consisting of the additional steps of: incrementing a counter each time one of the calculated glucose levels is not within the tolerance level; and recalibrating measurement procedure when the counter indicates a predetermined number of times the calculated glucose level was not within the tolerance level.
18. A non-invasive method of determining glucose level according to Claim 6, consisting of the additional steps of: incrementing a counter each time one of the calculated glucose levels is not within the tolerance level; and recalibrating measurement procedure when the counter indicates a predetermined number of times the calculated glucose level was not within the tolerance level.
19. A non-invasive method of determining the glucose level of blood in a patient comprising the steps of:
 - a. non-invasively measuring three distinct parameters of the body from which glucose level can be calculated;
 - b. calculating the corresponding glucose level for each of the three measurements;
 - c. calculating a glucose level by determining a weighted average of the three calculated glucose levels
 - d. repeating the measurement of one of the parameters;
 - e. calculating the corresponding glucose level for the measurement of the parameter in step d herein; and
 - f. periodically repeating steps a -c herein to confirm the accuracy of the glucose calculation.